



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,013	10/26/2000	Hiroshi Yoshida	P107400-00016	2916

7590 09/25/2002

ARENT FOX KINTNER PLOTKIN & KAHN, PLLC  
1050 Connecticut Avenue, N.W., Suite 600  
Washington, DC 20036-5339

EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
1755	

DATE MAILED: 09/25/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Offic Action Summary</b>	Application N .	Applicant(s)
	09/696,013	YOSHIDA ET AL.
	Examiner	Art Unit
	C. Melissa Koslow	1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 29 July 2002.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-10 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-10 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 29 July 2002 is/are: a) accepted or b) objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

    1. Certified copies of the priority documents have been received.

    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

1) Notice of References Cited (PTO-892)                    4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)                    5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ .                    6) Other: \_\_\_\_\_

This action is in response to applicants' amendment of 29 July 2002. The corrected or substitute drawings were received on 29 July 2002. These drawings are acceptable. The 35 USC 112, first paragraph rejections and the 35 USC 112, second paragraph rejections over claims 5-10 are withdrawn due to the amendment to the claims. The objection to the specification and the 35 USC 112 rejections with respect to the description on page 6 and section 3 in claims 4 and 6 are withdrawn due to applicants' arguments. Upon further consideration, the 35 USC 112 rejections over claim 2 are withdrawn. The art rejections over copending Application No. 09/806,373, WO 00/22202 and Minegishi et al and the art rejections over claims 6-10 are withdrawn due to the amendments to the claims. Applicant's arguments with respect to the remaining rejections have been fully considered but they are not persuasive.

The substitute specification filed 29 July 2002 has not been entered because it does not conform to 37 CFR 1.125(b) because: it lacks a marked up version and there is no statement that the substitute specification does not contain new matter.

The disclosure is objected to because of the following informalities:

On page 5, line 5, "metallic" is misspelled. On page 13, line 22, the non-existent word "elementlic" appears. It is unclear what the correct word should be. On page 15, lines 1-4 teaches crystal mixing more than two type of transition elements, but the examples in lines 5-15 teach using two transition elements. Thus it is unclear which teaching is correct, that more than two transition elements are required, or that at least two transition elements are required. Applicants state the properties of the ZnO-type compound can be varied by varying the densities of the added elements, but it is unclear what is meant by this phrase or how the density of the added elements is varied. It is noted that pages 13 and 14 appear to indicate that the "density" referred

Art Unit: 1755

to in this phrase is actually the amount of the added elements. Applicants need to clarify this issue. Finally, it is unclear how the energy is decrease and the sign and size of the magnetic interaction between metallic elements is controlled by the addition of at least two elements selected from Ti, Mn, Cu, V, Cr, Fe, Co, Ni, Rh or Ru. Appropriate correction is required.

The substitute specification was not entered and thus it does not overcome the above objections. The objections are maintained.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicants regard as their invention. Evidence that claim 2 fails to correspond in scope with that which applicants regard as the invention can be found in the last paragraph on page 5 of the amendment. In that paper, applicant has stated the minimum number of metals in the ZnO-type compound is two, and this statement indicates that the invention is different from what is defined in the claim because claim 2 requires a minimum of three of the listed elements. Claim 2 is dependent on claim 1 which mean claim 2 is directed to the compound contains at least one V, Cr, Fe, Co, Ni, Rh and Ru and further contains at least two of V, Cr, Fe, Co, Ni, Rh, Ru, Ti, Mn and Cu. Thus the minimum number of metals is three.

Claims 5-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5, as written, is confusing since it is unclear if it is a dependent claim or not. It is strongly suggested applicants' amendment this claim as suggested by the Examiner. Claim 6 is indefinite as to how the additives (1) to (3) are controlled by an amount of added elements, Ti, Mn, Cu, n-type dopant, p-type dopant and combinations of the added elements. Claim 7 recites

Art Unit: 1755

the limitation "the ferromagnetic transition temperature". There is insufficient antecedent basis for this limitation in this claim or in claim 6. Claim 7 is indefinite since it is unclear what is meant by "at least one of said amount of said combination". It is unclear how there is more than one amount of the combination of added elements. In addition, the compositions of the added elements are not defined in claims 6 and 7. Claims 8-10 are improperly dependent on claim 6. Claim 6 teaches the properties are adjusting by controlling the additives (1) to (3) by adding an amount of added elements, Ti, Mn, Cu, n-type dopant, p-type dopant and combinations of the added elements. Claims 8-10 teach the ferromagnetic state is stabilized by crystal mixing with (2). Claim s 8-10 recites the limitation "the ferromagnetic state". There is insufficient antecedent basis for this limitation in these claims or in claim 6.

Claims 6 and 7 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 6 and 7 are not supported by the specification since there is no teaching of controlling the additives (1) to (3) by adding an amount of added elements, Ti, Mn, Cu, n-type dopant, p-type dopant and combinations of the added elements. The specification teaches the ferromagnetic properties of the ZnO type compound is controlled by the amount and composition of additives (1) to (3).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Stoner et al.

This reference teaches a compound having the formula  $(Zn_{1-x}Y_x)O$ , where  $x$  is 0.005-0.16 and  $Y$  can be Ni, Cr, Fe or V. These compounds fall within the compounds of claim 1 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The claimed compound reads upon that taught.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Nitta et al.

Table 1 of this reference teaches the compounds  $Zn_{0.5}Fe_{0.5}O$  and  $Zn_{0.5}Ni_{0.5}O$ . These compounds fall within the compounds of claim 1 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The claimed compound reads upon that taught.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Hager.

This reference teaches  $ZnO$  doped with Ru or Rh and the method for producing these compounds. These compounds fall within the compounds of claim 1 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The present application teaches on page 9, lines 8-19, that the addition of Rh or Ru to  $ZnO$  will adjust the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of  $ZnO$ . The taught method of the reference of adding Rh or Ru to  $ZnO$  increases the amount of the dopant to above zero and thus adjusts the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of  $ZnO$ . The claimed compound and methods read upon that taught.

Claims 1, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Dausch.

This reference teaches ZnO doped with divalent Fe, Co or Ni and the method for producing these compounds. These compounds fall within the compounds of claim 1 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The present application teaches on page 9, lines 8-19, that the addition of these elements to ZnO will adjust the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of ZnO. The taught method of the reference of adding Fe, Co or Ni to ZnO increases the amount of the dopant to above zero and thus adjusts the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of ZnO. The claimed compound and methods read upon that taught.

With respect to the above art rejections, applicants argue there is nothing in these references to indicate the taught compounds are ferromagnetic and the Examiner has not shown the taught compounds are inherently ferromagnetic. The fact the reference does not indicate the taught compounds are ferromagnetic does not overcome the rejections since they clearly teach ZnO-type compounds that contain at least one of the claimed metals. The taught compounds are identical to those claimed and thus would be expected to have the same properties, absent any showing to the contrary. Similar products processes can reasonably be expected to inherently have the same properties. *In re DeBlauwe* 222 USPQ 191; *In re Wiegand* 86 USPQ 155 (CCPA 1950). When the prior art and appellant both describe products which are indistinguishable, then the products may also be assumed to be inherently indistinguishable. *In re Myers* 159 USPQ 339 (CCPA 1968); *In re Prindle* 132 USPQ 282 (CCPA 1962). Where the claimed and prior art products are identical or substantially identical in structure or composition, a *prima facie* case of

Art Unit: 1755

anticipation has been established. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). “When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.” “Products of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). It is immaterial that the references do not teach the claimed properties because the composition is the same and thus must necessarily exhibit the properties. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985). Applicants have not shown that taught compounds are not inherently ferromagnetic and do not have the claimed properties. The above rejections are maintained.

Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyazaki et al.

This reference teaches ZnO doped with 1-10 at% of at least one of Cr, B and Ga and the method for producing these compounds. B and Ga are known n-type dopants. These compounds fall within the compounds of claims 1, 3 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The present application teaches on page 6, lines 11-16 and page 9, lines 8-19, that the addition of Cr, B or Ga to ZnO will adjust the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of ZnO. The taught method of the reference of adding Cr, B or Ga to ZnO increases the amount of the dopant

to above zero and thus adjusts the ferromagnetic characteristics, such as the ferromagnetic transition temperature, of ZnO. The claimed compound and methods read upon that taught. Applicants argue that the reference does not use taught dopants B and Ga as n-type dopants and thus the reference does not teach the claimed compound. This argument is not convincing since the claims state the compound contains n-type dopant, which means it contains elements which are known n-type dopants. There is no indication in the claims that the claimed compound is a n-type doped ZnO, such as those in copending Application No. 09/806,373, WO 00/22202 and Minegishi et al, where the amount of dopant is in an amount to produce n-type electrical conduction. Applicants state the reference does not teach combinations of B and/or Ga with Cr, but the reference clearly teaches ZnO doped with at least one of Cr, B and Ga in the abstract, column 2, lines 16-18, column 3, lines 58-60 and claim 1. Applicants have not show that taught compounds are not inherently ferromagnetic and do not have the claimed properties. The above rejections are maintained.

Claims 1, 2, 4 and 5 are rejected under 35 U.S.C. 102(b) as being anticipate by Pfrommer et al.

This reference teaches ZnO doped with at least one divalent metal selected from Fe and Mn. Thus the reference teaches ZnO doped with Fe or Fe and Mn. These compounds fall within the compounds of claims 1, 2 and sections 1 and 3 of claim 4. Thus the taught compounds would inherently be ferromagnetic and would inherently exhibit light-filtering characteristics, absent any showing to the contrary. The present application teaches on page 9, lines 8-19, that the addition of Fe or Fe and Mn to ZnO will adjust the ferromagnetic characteristics, such as the ferromagnetic transition temperature, the stability of the ferromagnetic state and the light

Art Unit: 1755

filtering characteristics, of ZnO. The taught method of the reference of crystal-mixing Zn and Fe or Fe and Mn will increase the amount of the dopant to above zero and thus adjusts the above ferromagnetic characteristics of ZnO. The claimed compound and methods read upon that taught.

Applicants argue the reference teaches the taught compounds are used in cosmetics and that it does not teach they are ferromagnetic. As stated above, the fact the reference does not teach they are ferromagnetic is immaterial since the reference teaches ZnO doped with Fe or Fe and Mn. Applicants states the reference teaches adding doping oxides to doped ZnO but has not presented any explanation as to how they reached this conclusion. This conclusion is counter to the teachings of the reference as shown by column 1, line 62 through column 2, line 30 and column 3, line 8-13. Applicants have not show that taught compounds are not inherently ferromagnetic and do not have the claimed properties. The above rejections are maintained.

It is noted that once the 35 USC 112 rejections over claims 6-10 are overcome, the art rejections of these claims over the above references will be reinstated.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 1755

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (703) 308-3817. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (703) 308-3823.

The fax number for Amendments filed under 37 CFR 1.116 or After Final communications is (703) 872-9311. The fax number for all other official communications is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661 or (703) 308-0662.

*cmk*  
cmk  
September 25, 2002

*ck*  
C. Melissa Koslow  
Primary Examiner  
Tech. Center 1700